

Combined Raman/Infrared Reflectance Instrument for In Situ Mineral Analysis, Phase I

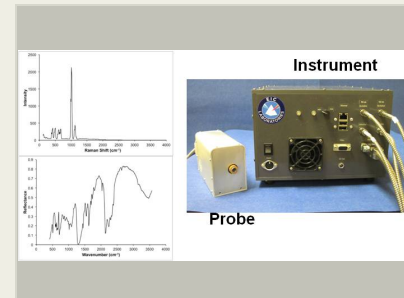
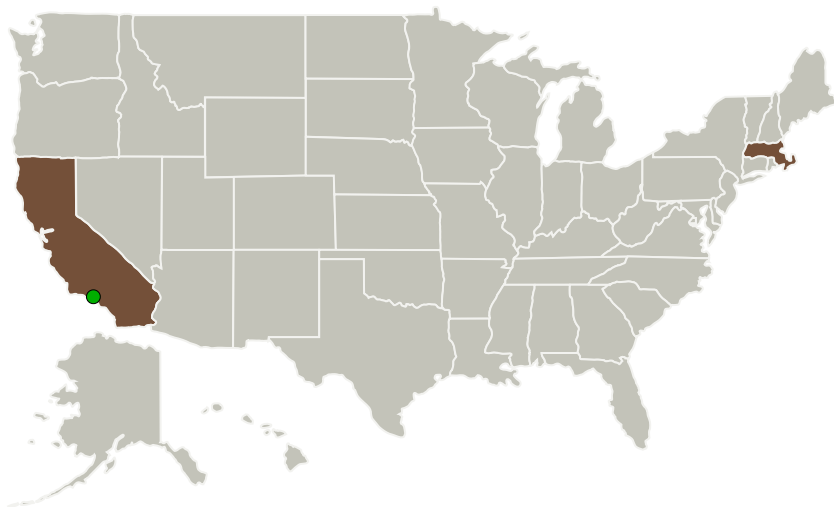
Completed Technology Project (2013 - 2013)



Project Introduction

NASA's Science Instruments, Observatories, and Sensor Systems Roadmap calls for instruments capable of in situ mineralogical analysis in support of planetary missions in the coming decades. Such instruments will provide capabilities for surveying and identifying minerals on and beneath planetary surfaces, guided by robotic vehicles. These instruments should be highly reliable and compact, be remotely operable and require minimal operating resources. To meet this challenge, the goal of the proposed Phase I program is to develop a combined Raman and infrared fiber optically coupled probe head that can be used for mineral analysis by providing a complete vibrational spectroscopic fingerprint for high quality in situ mineral identification that can be used in a variety of NASA platforms. For the Phase I work, the goal will be to prototype a dual excitation Raman/IR fiber optically coupled microscope probe head and demonstrate its utility in the analysis of minerals. The Phase I Work Plan includes: 1. Prototyping of an Integrated Raman/IR probe head 2. Performance Evaluation of the Integrated Raman/IR Probes 3. Acquisition of a preliminary Raman and IR database, in collaboration with Dr. Robert Downs director of the RRUFF mineralogy project at the University of Arizona

Primary U.S. Work Locations and Key Partners



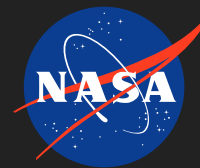
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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Organizations Performing Work	Role	Type	Location
EIC Laboratories, Inc.	Lead Organization	Industry	Norwood, Massachusetts
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Massachusetts

Project Transitions

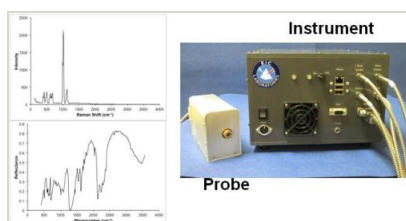
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138044>)

Images



Project Image

Combined Raman/Infrared Reflectance Instrument for In Situ Mineral Analysis
(<https://techport.nasa.gov/image/132486>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

EIC Laboratories, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

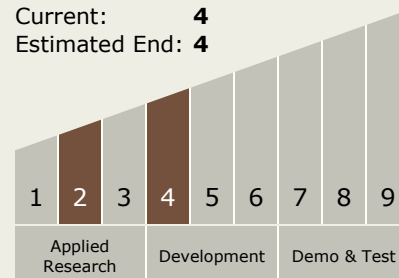
Carlos Torrez

Principal Investigator:

Job Bello

Technology Maturity (TRL)

Start: 2
Current: 4
Estimated End: 4



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System